

December 30, 2004

Mr. R. T. Ridenoure
Division Manager - Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
Post Office Box 550
Fort Calhoun, NE 68023-0550

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 (FCS) - CLOSEOUT OF NRC
BULLETIN 2003-01, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON
EMERGENCY SUMP RECIRCULATION AT PRESSURIZED WATER
REACTORS" (TAC NO. MB9577)

Dear Mr. Ridenoure:

This letter acknowledges receipt of Omaha Public Power District's (OPPD) response dated August 8, 2003, to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," dated June 9, 2003. The NRC issued Bulletin 2003-01 to all pressurized water reactor (PWR) licensees requesting that they provide a response, within 60 days of the date of Bulletin 2003-01, that contains either the information requested in the following Option 1 or Option 2 stated in Bulletin 2003-01:

- Option 1: State that the emergency core cooling system (ECCS) and containment spray system (CSS) recirculation functions have been analyzed with respect to the potentially adverse post-accident debris blockage effects identified in the Discussion section, and are in compliance with all existing applicable regulatory requirements.
- Option 2: Describe any interim compensatory measures that have been implemented or that will be implemented to reduce the risk which may be associated with potentially degraded or nonconforming ECCS and CSS recirculation functions until an evaluation to determine compliance is complete. If any of the interim compensatory measures listed in the Discussion section will not be implemented, provide a justification. Additionally, for any planned interim measures that will not be in place prior to your response to this bulletin, submit an implementation schedule and provide the basis for concluding that their implementation is not practical until a later date.

OPPD provided an Option 2 response.

Bulletin 2003-01 discussed six categories of interim compensatory measures (ICMs): (1) operator training on indications of and responses to sump clogging; (2) procedural modifications if appropriate, that would delay the switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary to provide required flows to cool the containment and reactor core, and operating the CSS intermittently); (3) ensuring that alternative water sources are available to refill the reactor water storage tank (RWST) or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere; (4) more aggressive containment cleaning and increased foreign material controls;

(5) ensuring containment drainage paths are unblocked; and (6) ensuring sump screens are free of adverse gaps and breaches.

OPPD has implemented the following ICMs as committed to in its response:

1. Provide additional operator training on the identification of the symptoms indicative of a degraded sump during a loss-of-coolant accident (LOCA) (September 5, 2003) – ICM category #1.
2. Develop procedural guidance and associated training for responding to sump clogging (March 26, 2004) – ICM category #1.
3. Evaluate shutting off one high pressure safety injection (HPSI) pump (pump SI-2C) pre-recirculation actuation signal (RAS) if operator resources are available or shortly after RAS (March 26, 2004) – ICM category #2.
4. Evaluate operating with one containment spray pump (CSP) (stopping one or two pumps) prior to the receipt of an RAS (requires licensing action) if operator resources are available or shortly after RAS (May 21, 2004) – ICM category #2.
5. Develop procedural guidance for refilling the safety injection and refueling water tank (SIRWT) (SIRWT, refueling water storage tank (RWST) equivalent at FCS) immediately post-RAS (March 26, 2004) – ICM category #3.
6. Provide for more aggressive containment cleaning and foreign material/debris control (November 21, 2003) – ICM category #4.
7. During the 2003 refueling outage, perform a walkdown of containment and verify that drainage paths are unblocked, and generate a condition report as appropriate (November 15, 2003) – ICM category #5.
8. Verify that the containment sump screens are free of adverse gaps and breaches (November 15, 2003) – ICM category #6.

In a June 11, 2004, response to a May 24, 2004, NRC request for additional information (RAI), OPPD (1) elaborated at length on the operator training to be implemented for the procedure changes being considered – ICM category #1, (2) elaborated on the meaning of the phrase "establishing a limiting injection water volume"; the intent of which is to fill the containment to at least the top of the reactor coolant system (RCS) hot legs to allow for long-term cooling – ICM category #1, (3) described the procedure changes to be implemented as ICMs at FCS (a combination of the Westinghouse Owners Group (WOG) Candidate Operator Actions (COAs) and other plant specific actions, using the WOG WCAP-16204/CEN-152 as definitive guidance), and stated which procedure changes were considered inappropriate and would not be implemented, with justifications (by September 30, 2004) – ICM categories #1, #2, and #3, and (4) listed the unique or plant-specific compensatory measures that OPPD has considered.

Specifically with respect to the ICM procedure changes OPPD will be implementing by September 30, 2004, OPPD stated that it would: (1) secure one or two CSP(s) prior to RAS

(contingent on approval of an amendment to the FCS operating license, license amendment request submitted to the NRC on May 21, 2004) – ICM category #2, (2) secure HPSI pump SI-2C prior to RAS – ICM category #2, (3) monitor pumps for indications of cavitation – ICM category #1, (4) establish the minimum required HPSI flow from the SIWRT – ICM category #1, (5) establish the limiting injection water volume, when appropriate (with the intent of filling containment to at least the top of the hot legs to allow for long term cooling) – ICM category #2, (6) switch back and forth between the containment sump and the SIWRT to allow time for debris settling during long term core cooling – ICM category #1, (7) inject more than one SIWRT volume from a refilled SIWRT or by bypassing the SIWRT – ICM category #2, (8) provide more aggressive cooldown and depressurization following a small break LOCA – ICM category #2, (9) provide guidance on symptoms and identification of sump blockage – ICM category #1, and (10) develop contingency actions in response to a containment sump blockage, loss of suction, and cavitation – ICM category #1.

The NRC staff has considered your Option 2 response for compensatory measures that were implemented to reduce the interim risk associated with potentially degraded or nonconforming ECCS and CSS recirculation functions. Based on your response, the NRC staff considers your actions to be responsive to and meet the intent of Bulletin 2003-01. Please retain any records of your actions in response to Bulletin 2003-01, as the NRC staff may conduct subsequent inspection activities regarding this issue.

Should you have any questions, please contact me at (301) 415-1445.

Sincerely,

/RA/

Alan B. Wang, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-285

cc: See next page

December 30, 2004

request submitted to the NRC on May 21, 2004) – ICM category #2, (2) secure HPSI pump SI-2C prior to RAS – ICM category #2, (3) monitor pumps for indications of cavitation – ICM category #1, (4) establish the minimum required HPSI flow from the SIWRT – ICM category #1, (5) establish the limiting injection water volume, when appropriate (with the intent of filling containment to at least the top of the hot legs to allow for long term cooling) – ICM category #2, (6) switch back and forth between the containment sump and the SIWRT to allow time for debris settling during long term core cooling – ICM category #1, (7) inject more than one SIWRT volume from a refilled SIWRT or by bypassing the SIWRT – ICM category #2, (8) provide more aggressive cooldown and depressurization following a small break LOCA – ICM category #2, (9) provide guidance on symptoms and identification of sump blockage – ICM category #1, and (10) develop contingency actions in response to a containment sump blockage, loss of suction, and cavitation – ICM category #1.

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/RA/

Alan B. Wang, Project Manager, Section 2
Project Directorate IV
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